Geographic Scope

The geographic scope of an individual shared resource project can be extensive, perhaps even the whole state's interstate system. Or, it can be confined to a single parcel of real estate, for example a short segment of ROW between two interchanges, a single bridge structure, or a DOT maintenance facility yard. The public agency can actively define project scope — and may even wish to require proposals to match that scope — based on policy and practical considerations. It can also passively let each private partner define the geographic boundaries of their projects. Considerations of geographic scope differ between wireless and wireline projects.

Continuity problems or gaps that may be associated with smaller projects can be of two types:

- Physical continuity, that is, there are gaps in the public sector backbone provided by in-kind compensation because not all ROW is included in shared resource arrangements; and

- Technical or electronic continuity, that is, the public sector system provided through in-kind compensation is eclectic mix of interfaces and technologies because each project has a different private partner or partners, each offering different compensation or physical infrastructure.

Enlist Participation

The culminating activity of Step 2, Finding Partners, is actually enlisting vendor participation in shared resource projects. There are three steps:

- Determine solicitation process;

- Solicit proposals;

- Screen proposals/select partners.

Determine Solicitation Process

There are three basic solicitation processes currently used by public agencies engaged in resource sharing: competitive bid, master lease, and vendor initiative.

- Competitive bid: Public agency issues Request for Proposals to solicit potential partners' "best bid" for conditions and compensation.

"...RFP should be structured to present information on each topical focus such as: contract provisions, marketing and technical specifications. Commingling may lead to confusion and miscommunication..."

- Master lease: Public agency formulates template that specifies lease conditions and compensation levels for varying types of shared resource partnerships.

- Vendor initiative: Interested vendors submit proposals to public agency indicating property or ROW to which they want access, infrastructure they intend to install, and type and level of compensation offered. These proposals may be unsolicited, i.e., without prior public sector outreach, or in response to public agency solicitation.

Each approach has several distinguishing features, but variations are possible within each type.

Solicit Proposals

It is in the public agency's best interest to reach as many potential partners as possible, not only to ensure non-discrimination but to elicit the best possible offers for partnerships. This can be achieved by contacting potential partners directly, using the list of potential partners generated in the first stage of Finding Partners. It can be enhanced, if necessary and

Dimension	Competitive Bid	Master Lease	Vendor Initiated
Time deadline	Yes	Can be indefinite or limited time period for applications	Can be indefinite or limited time period for applications
Geographic scope (ROW segment, property sites)	Defined by public agency or by private vendor.	Generally public agency identifies available property or ROW and partner selects.	Defined by partner(s).
Systematic publicity and outreach	Yes	Generally, though process may be developed after vendor initiative.	Not necessarily.
Suitable for single partnership	Yes	No	Only with post-submission outreach to other potential partners to solicit reaction (ensure non-discrimination).
Form of compensation	Open or agency specifies.	Generally cash, but may include barter.	Vendor specifies, though agency can indicate preferences.
Level of compensation	Vendor determines, but agency can specify minimum acceptable bid.	Agency specifies, with some flexibility to adapt to individual circumstances (e.g., volume discounts).	Vendor determines, but agency has greatest negotiating flexibility to enhance value.

time permitting, through additional publicity in trade journals and newspapers. If competitive bidding is involved, then an RFP must be written and distributed.

Publicity and RFPs may be very general, indicating the public agency's basic interest in shared resource projects and general policy decisions. Or, they may be very detailed, with a list of public sector communications needs that barter agreements might address and a complete inventory of public property available for sharing. Private partners have indicated their strong interest in prior information on available property so they can determine which of their needs might be supported with shared resource partnerships. This was especially true for wireless vendors whose interests are site-specific and include non-ROW property as well as ROW.

Screen Proposals/Select Partners

Several principles are paramount in screening and selecting partners:

- Ensure no discrimination among potential partners/competitors in selection or partnership terms;
- Erect no barriers to entry;
- Support public agency policy objectives.

Under the master lease approach, the process is straightforward: all proposers that meet technical specifications and offer the required level of compensation are accepted. With vendor initiatives, post-submission publicity and solicitation may be necessary before a partnership is approved unless all vendors can be accommodated.

The competitive bid process can produce a single winner, based on pre-specified system of screening, or several partners with "responsive" bids. Since all interested parties are free to bid and selection criteria are announced in advance, most would argue that the process is non-discriminatory. Some might argue that rejection of low-bidders constitutes a barrier to entry but most believe the process is acceptable, particularly if winning bidders are pledged to accommodate competitors through sub-leasing.

Under all three approaches, screening and selection is complicated when there are variations among bidders in project specifications and compensation. Selecting the winning bids, for example, becomes difficult when one vendor offers cash compensation, a second vendor with a different project offers barter compensation, and a third offers

"...Although the RFP should solicit innovative ideas, the public agency may consider indicating preferences, such as preference for a co-location arrangement with one firm as lead at each site and others given access on specified terms..."

a different barter arrangement or both cash and in-kind compensation. Under these circumstances, the public agency may have to compare and judge bids that are not immediately comparable. Nevertheless, even after partners have been selected, the public agency must ensure that all pay "fair market compensation" and no vendor gets a better deal than others.

Although it can be difficult to judge comparability of different compensation plans among projects, agencies should keep in mind that:

- Variations in compensation (whether cash or barter) can be justified if projects vary in size, type of equipment, conditions of access, etc.;

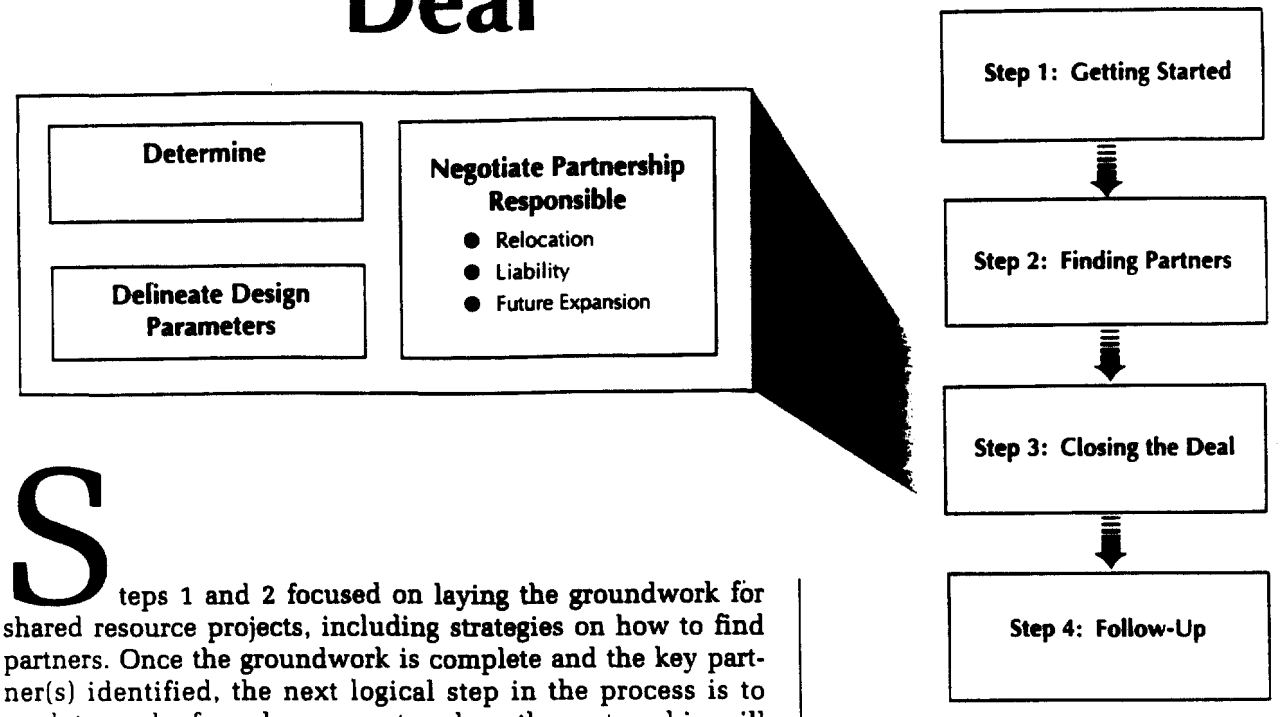
- Barter compensation can be evaluated in dollar terms to facilitate comparisons either based on average market values for services provided or based on:

  Upper bound: avoided cost (i.e., what it would cost the public sector to supply itself with the same equipment or services);

  Lower bound: private partner outlay (i.e., what it will cost the private partner to provide the in-kind compensation);

- Level of compensation can vary between early and later applicants because fair market value changes over time.

Step 3: Closing the Deal



Steps 1 and 2 focused on laying the groundwork for shared resource projects, including strategies on how to find partners. Once the groundwork is complete and the key partner(s) identified, the next logical step in the process is to work toward a formal agreement on how the partnership will be executed. The culmination of this effort is a signed contract that codifies the partnership relationship. This section of the guidance provides an overview of selected key issues that are addressed in the process of closing the deal.

Basically, closing the deal has two phases. The first is the negotiation phase, when the public and private partners work to achieve consensus on issues related to compensation, allocation of responsibilities among partners and the specification of design parameters. Step 3 culminates in the second phase when final contract is prepared and signed by both parties after a detailed review of the terms and conditions set forth in the contract document.

A review of contracts across the country for completed and ongoing shared resource projects indicate that there is no fixed contract format. Rather, contracts are customized to fit the needs of individual projects and reflect the consensus reached by the public and private partners. However, the following three general themes or principles emerged from discussions with various public and private partners.

"Develop a 'model' contract incorporating compensation and technical specifications. Use this model for each individual site or for future partnerships to increase vendor participation without the long ordeal of going through negotiations from scratch each time."

Comprehensiveness: Comprehensiveness ensures that the final contract covers all relevant details and dimensions affecting the partnership. To the extent possible, the contract should identify and address all factors and situations that could bear on the partners' business relationship. By eliminating gaps, the contract minimizes the chance that the partnership is stymied in the future because partners cannot agree on how to address an unforeseen development. For example, the contract should address allocation of responsibility among the partners regarding accidental damage to telecommunications equipment.

Specificity: Attention to specificity means that the particulars of the partnership agreement are clearly defined and the potential for misinterpretation and misunderstanding is minimized. For example, due to the evolving nature of the telecommunications industry, it may be necessary to review the original contract at fixed time intervals. Specificity suggests that the contract explicitly schedule the intervals at which contract reviews can be undertaken in addition to defining the length of the overall contract period (which can range from 5 to 40 years).

Flexibility: Flexibility helps the partners adapt to unforeseen and changing conditions related to technological advancement and future communication needs. For example, in a barter arrangement, built-in flexibility in the contract may allow partners to have the ability to adapt to new technological advancements that is more cost-effective and efficient than the original equipment. For example, flexibility may be achieved by having the contract define processes for addressing issues rather than prescribe exact terms that are fixed throughout the term of the partnership.

These three principles, however, can work at cross-purposes and there are logical trade-offs among them. For example, flexibility can be eroded by specificity in the contract and vice-versa. Therefore, it is important to carefully evaluate the consequences of the potential trade-offs in light of the overall project goals to ensure that the final contract reflects the needs and expectations of both partners. For example, in negotiating in-kind compensation, there is greater need for flexibility and a lesser rationale for specificity when public officials have only a tentative estimate of their current and future communication needs (as estimated in Step 1 of the project implementation process). On the other hand, if public officials are confident of their estimates of communication needs, it would be logical to adopt a greater degree of specificity than flexibility in the contract.

The balance of this section summarizes three major activities typically included in the contract negotiation phase:

- ➤ Determine compensation level and type,
- ➤ Negotiate partner responsibilities, and
- ➤ Delineate design parameters.

When negotiation is completed and consensus achieved, a contract is drawn up and signed and implementation of shared resource projects moves into Step 4: Following Up.

"For barter arrangements, in general, vendors are reluctant to provide equipment they are not going to use such as CCTV cameras, VMS, and are more open to supplying cellular towers or fiber optic cables."

Determine Compensation

Compensation may be set in previous steps, for example, as part of a master lease that specifies cash payments or as in-kind equipment that a vendor bid in its winning proposal for an exclusive marketing partnership. If compensation was not determined in previous steps, it must be negotiated as part of closing the deal. Partners must review and achieve consensus on three aspects:

"...Attempt to estimate cash equivalent values for in-kind compensation to ensure the agency is getting fair market value for the ROW."

Form of compensation: that is, the partners' choice among three basic options: strict barter (e.g., communication equipment such as fiber optics fibers and support electronics equipment), cash-only (e.g., periodic lease payments) and a combination of barter and cash (e.g., communication capacity and periodic lease payments).

Level of compensation: that is, the amount or basis for determining cash revenue (e.g., fixed level of dollars per mile) or, for in-kind compensation, the amount and type of communications capacity (e.g., amount and type of data carrying capacity of the communications facilities).

Compensation schedule: that is, the timing of cash payments (e.g., monthly versus annual lease payments) and/or installation schedule for in-kind compensation (e.g., six lighted fibers by the end of the fifth year at one capacity type, upgraded to higher capacity any time after the 10th year, etc.)

Partners should also decide whether compensation type and level remain the same throughout the contract period or whether they will change over time as the market for communications services matures and as transportation needs change. Compensation schedule should include not only the timing for payments but also the milestones or conditions that trigger adjustments in compensation.

Negotiate Partner Responsibilities

The second set of issues the public and private partners need to negotiate and arrive at consensus involve the distribution of responsibilities among the public and private partners. This is important since the allocation of responsibilities among partners may have a direct effect on private sector willingness to pay for access to ROW. Three major areas of responsibility include:

- Relocation of communications infrastructure.
- Liability in case of accidents and/or damage. and
- Future expansion.

Relocation

Communications infrastructure may need to be relocated to some other place on the ROW if the public sector undertakes highway improvement projects such as road widening and resurfacing or the installation of new transportation management facilities within the existing ROW. The issue here is who assumes management and financial responsibility for moving public and private communications infrastructure — conduits, inner ducts and fiber, equipment sheds, towers and antennae, etc.

Traditionally, when a utility was granted access to public ROW, franchise law provided that the utility was responsible for relocation costs. This was based on the argument that the utility did not compensate the public sector for the use of the ROW. However, this argument may no longer be valid for shared resource projects if private partners compensate the public agency for use of the ROW. Additionally, the historical definition of transportation "improvements" may itself introduce a controversial element. For example, the installation of transportation management systems within existing ROW by the public agency may not be classified as a "highway improvement". Precedent, therefore, does not provide a clear guide to responsibilities when such installations require relocation of private telecommunications infrastructure.

Given both factors, a key element in negotiating shared resource agreements is allocation of relocation responsibility among project partners. A review of completed and ongoing shared resource projects across the country suggest some alternative approaches; private or public partners can bear all costs, or both can share the costs. The choice in each case will be driven by a number of project-specific factors, including the nature of relationship between the public and private

Allocation of Responsibility for Relocation		
Approach	**Description**	**Example**
Private partner responsible	Private partner solely responsible for bearing costs of relocation.	Ohio Turnpike
Public partner responsible	The state or public agency solely responsible for bearing all costs of relocation.	Missouri
Joint responsibility	Public and private partners share responsibility. For example, public agency provides duct for fiber optics; private partner relocates and reestablishes connectivity.	Maryland
Time-based shift in responsibility	Greater risks (costs) assumed by public partner in early years (e.g. first year); private sector responsible for all or greater proportion of relocation expenses in later years.	New Jersey

partners and the perceived risk of relocation. Moreover, the allocation may shift over time. In one case, the private partner(s) assume little or no responsibility in the near term, based on the argument that the public agency must be more accountable up front if it fails to anticipate improvement needs in the short-term. Private partners may be more willing to accept greater responsibility/risk in later years in part because they will have recouped a sufficient proportion (if not all) of their initial investment by that time.

Liability

Liability issues in shared resource projects can arise from system failure due to physical damage or equipment malfunction, vehicular accidents resulting from interference in the public ROW, breach of warranty and in the event the private partner pulls out of the deal or faces bankruptcy. The issue of liability is especially critical in such projects since both the public and private agencies work actively in the ROW and may even share the same infrastructure (conduit, tower). It is important to clearly identify all potential situations that could lead to a significant liability from each partner's standpoint, and specify the extent to which each partner will be held responsible in terms of the liability. Seemingly minor differences in contract

Type of Liability	Issues	General Practice
Actual damages	Assigning responsibility for physical repair	Liability assumed by party that caused the damage
Consequential damages (resulting from service interruption or breach of warranty)	Limiting public agency liability for damages from routine road work Where public and private cable or conduit are separate, allocating liability for damage from maintenance activities (assuming maintenance has not been delegated to a single party) Where several private entities are permitted access, setting up a dispute review mechanism requiring all potential parties to join their claims in one action (reduces public agency's exposure to claims) Providing in licensee's customer contracts that customers will not hold licensee and public agency liable for consequential damages due to service interruptions	Each partner is held responsible for only that portion of the liability that is directly connected to the activity initiated or undertaken by that particular partner. That is, a partner is not held responsible for any part of the liability if it resulted from an activity initiated by the other partner.
Tort actions	Limiting vendors' exposure Determining scope of sovereign immunity, especially in "joint ventures"	
Other	Obtaining adequate surety for vendor's obligations at reasonable cost	

language can result in various shades of interpretation and complicate the distribution of responsibility among partners. The following table presents an overview of the types of liability, associated issues and, where possible, the general practice in such circumstances.

Future Expansion

The market for communications is dynamic and communications for transportation — particularly ITS — is even less predictable. Communications needs in both the private market and public sector will most certainly change over the term of the shared resource project. It is thus important that, in the event of future expansion of the communications infrastructure, the public and private partners designate and agree upon the specific roles and responsibilities for each. Flexibility to achieve future expansion depends on clear guidelines or directions that specify individual and joint responsibilities regarding such issues as:

- Whether or not to build excess capacity at the outset to accommodate future needs (e.g., empty inner ducts for fiber optics, towers built to hold more antennae than installed initially for wireless communications) and, if so,

"To accommodate future needs, public agencies might consider building in a proportional growth factor based on the private partner's expansion plans — e.g., as private partner expands, they must expand state infrastructure equivalent to 25 percent of what they provided for themselves."

how much, who bears the cost, and how much of this capacity is allocated to each of the partnership participants,

- ➤ When capacity is added later on, which partner is responsible for overseeing and managing the expansion process (contracting, construction, administrative matters such as permits),
- ➤ Under what conditions can/should a new partner be brought in to assume responsibility for expanded capacity,
- ➤ What requirements must be satisfied prior to initiating the expansion (for example, to ensure non-discrimination),
- ➤ Who decides when and what upgrades in public sector electronics equipment are justified and who is responsible for installation and cost, and
- ➤ What elements of the current contract are applicable in subsequent contracts that may be developed in order to execute the required expansion.

The choice between initial overbuilding and adding-on later depends in part on costs of different types of capacity. That is, it is less expensive to add extra conduit and/or inner ducts at the beginning than to re-open the trench later on. On the other hand, electronics upgrading can be implemented at later dates without prohibitive installation costs. The balance between overbuilding and adding-on also depends on knowing how needs will change; sometimes expansion can only be initiated after needs are identified (e.g., additional traffic management VMS or closed-circuit TVs in new, previously undeveloped, areas).

Delineation of Design Parameters

Because shared resource facilities—either during construction or once complete—on public rights-of-way can compromise both the safety and operation of the transportation facility, the design parameters, particularly those pertaining to wireline installations, must be clearly addressed in a shared resources contract. Specifically, the contract must delineate specifications and general directions for the responsibilities of the public and private partner in relationship to the design, construction, and operation of shared resource facilities. In the absence of an universally acceptable set of design standards on installing communications infrastructure along rights-of-way, public agencies need to refer to existing standards as appropriate. It should keep in mind, however,

Wireline Facts (1): General

- Maintenance access necessary for both above and below ground structures
- Structures require equipment shelters for switching and re-transmission equipment
- Clear zones typically required for all structures to protect the public and prevent damage

Wireline Facts (2): Underground Design

Location:	factors driving location include availability of ROW, safety consideration construction workers, costs, susceptibility to damage and location of other utilities
Placement:	may be plowed in rural areas but will usually need to be trenched in urban/suburban areas; if encased, duct will need to be trenched; duct allows for joint use with other utilities
Cable Depth:	sufficient to prevent accidental damage due to normal surface activity; marked with above-ground markers to minimize damage potential
Groundings:	buried cable typically must be grounded both at the beginning and along cable route

that fiber optics and communications infrastructure differ from other utilities in their characteristics. Success in implementing shared resource projects may be enhanced by adapting technical specifications in light of this.

In general, the categories of design concerns, that should be addressed in contracting include:

- Safety,
- Design considerations,
- Constructability,
- Maintenance, and
- Accommodation of telecommunication features within the transportation corridor.

Safety Issues

Safety issues must be addressed in the contracting documents to assure appropriate responsibilities are assigned and all parties, public and private, understand their role in assuring that safety issues are addressed in project development. Standard guidelines for safety-related items exist and should be applied as appropriate. Those guidelines to be used should be referenced in the contract documents.

In addition, the concerns for safety during construction and maintenance operations need to be incorporated as part of specific agreements, either by reference or inclusion in the contract documents, in order that all parties involved with the project incorporate safety concerns in their work. The design of the project should reflect standard specifications adopted in AASHTO guides as appropriate for the project (utility accommodation, National Manual on Uniform Traffic Control Devices for Streets and Highways, etc.).

Certain requirements for shared resource projects in particular may be beyond agency existing guidelines. Therefore, the contract documents should include any additional materials that may be needed for the specific project. An important aspect of the safety issue involves those safety features enforce during construction and maintenance activity where there is great potential for disruption of traffic flow from lane closures, detour configurations, and construction zone management practices. These requirements should be incorporated in the documents and their use explicitly referenced. Those guidelines to be enforce during maintenance activities need to be specifically noted and it may be appropriate to

include a permitting process or notification requirement prior to maintenance of telecommunications facilities on public rights-of-ways. Horizontal installations will require different safety concerns than wireless facilities, which usually are remotely located and do not normally occupy near proximity to traveled lanes, and where appropriate should be dealt with separately.

Design Parameters/Considerations

There are a number of design features of telecommunications facilities that need to be explicitly addressed in standards or guidelines. The contract documents should explicitly refer to such adopted specifications or should include specific requirements for the project in question. Public agencies need to take some care that the standards are applied in a non-discriminatory fashion as required under the Telecommunications Act of 1996. The use of standard specifications can reduce the chance of these problems occurring but not entirely eliminate them; therefore, managers need to be aware of the impact of the application of standard materials to a specific project.

Standards should address the location or interval or placement for poles or other structures which could represent hazards to the motoring public. The distance from the edge of pavement becomes a factor in these installations and any above ground facilities should be reviewed to assure that necessary clear zones are maintained on highway facilities.

Wireline facilities will require nodes and re-transmission locations which must be accommodated near to the main line of the cable installation. This presents particular challenges where auxiliary power sources must be maintained to ensure that the amplification and re-transmission devices remain operable at all times. Care should be taken in placing these vaults and structures away from the main travel lanes, but in serviceable areas so that equipment necessary for their maintenance does not obstruct or create safety problems on the travel-way. Likewise, maintenance equipment and storage sheds need to be located within reasonable servicing distances from the telecommunication equipment.

Wireless towers which are located off of the immediate right-of-way of facilities present other design challenges — both technical and aesthetic. Height, appearance, and possible interference with other wireless equipment all should be taken into account in location of these facilities. Public sponsors will need to ensure that appropriate local controls — zoning, building permits, etc. — are acquired as necessary for a private activity that may not fit under normal exemptions

Wireline Facts (3): Above-ground Design

Location:	behind sidewalk or specified distance from curb for urban areas and at edge of ROW in rural areas
Pole Spacing:	depends upon type of overhead structure to be supported, storm loads expected, wire capacity, locational constraints
Clearance:	sufficient to provide for safety under storm loadings (typically at least 15.5 feet along and across public roads and 23.5 feet over railroad tracks when loaded
Joint-use:	taller poles may be shared by electrical power, telephone and cable television

Physical Facts (Wireless):

- Each antenna requires equipment shelter for switching equipment (typically 150-400 square feet per site), which must be located within 100 feet of the antennae it supports
- Line of sight technology means areas with high trees require higher support structure
- Three types of antennae base:

Monopole:	single tubular pole, typically less than 200 feet high
Lattice tower:	3-4 faces with lattice inter-connects typically up to 350 feet high
Guy tower:	tower with guy cables to stabilize; this type requires most land base and is the least stable

- Most needs can be satisfied with 150-250 foot high tower/pole.
- Access necessary to base of antenna and to equipment for maintenance
- Antennae located in regions with freezing precipitation will require clear area around base and guy wires to prevent damage from falling ice

for these public agents. In addition, the Federal Aviation Administration (FAA) may have height controls for areas near airports.

Some public agencies may wish to enter into lease agreements as part of their contracting processing to provide location for maintenance equipment and facilities at existing maintenance locations used by the public agent for their equipment. While this provides the opportunity for additional income for the right of way owner, available space and other operational concerns need to be considered prior to contracting as decisions will be needed as to how to provide for this type of use, another dimension of shared resource.

Constructability

Although constructability problems do not normally occur in most telecommunications shared resource projects, it is an area that must be monitored with concern and should be addressed in contracting documents. Constructability for wireline facilities that are simple cable installation projects are minimal and, once traffic control is addressed, present little problem beyond current traffic control standards. However, once one moves behind the simple installation of the cable to constructing re-transmission stations, cable nodes, and other facilities, constructability may present a particular challenge as to the operation of the transportation facility. In urban areas, high volume facilities are very sensitive to disruptions along the shoulders and in the median and great care should be taken in the location and construction management requirements for facilities located in these areas.

Maintenance Concerns

Telecommunications facilities represent relatively long-term investments for which utility over long time periods is necessary to ensure that expected returns will occur. Shared resource contracts must include provision for maintenance of telecommunications equipment and facilities located in rights-of-way as part of shared resource projects and must address these concerns explicitly, both in terms of the accomplishment of the maintenance (who's to carry it out), and the financial responsibility for conducting the maintenance, both routine and longer-term maintenance and upgrade projects.

Accommodation of Telecommunication Features

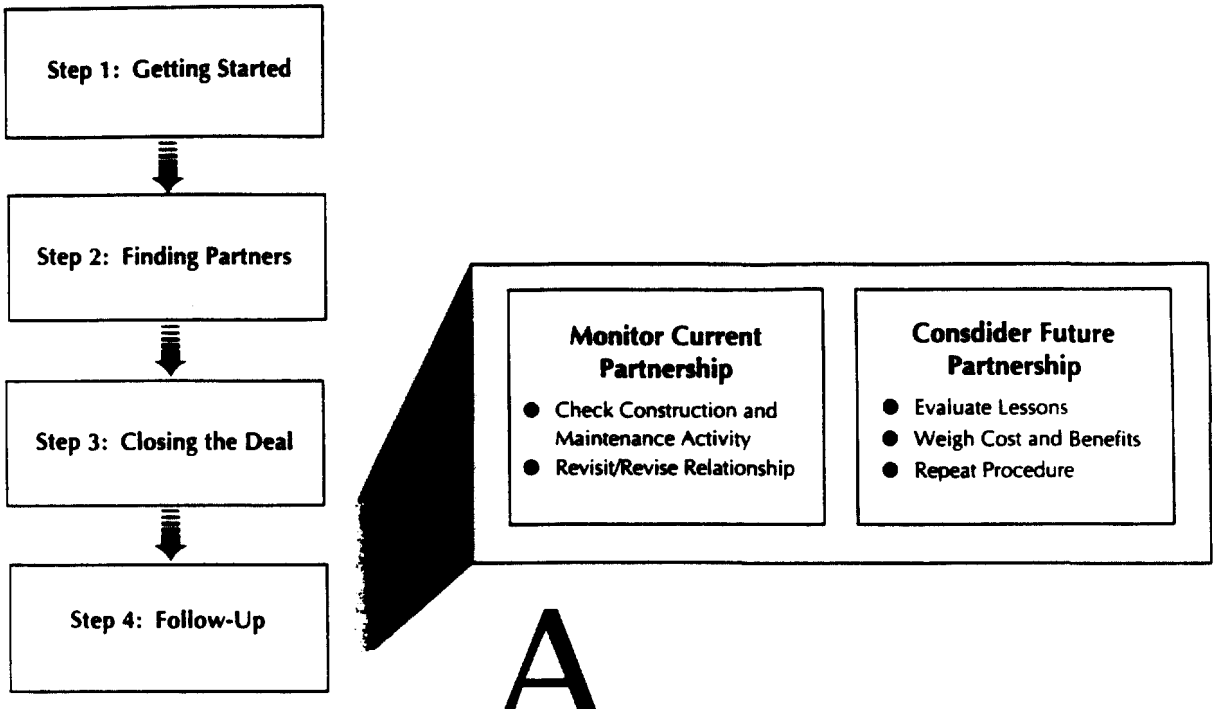
Most shared resources projects represent refittment of existing transportation rights of ways with facilities to accommodate telecommunications activities, either wireline or wireless. As this area of technology matures, there will be a need to

accommodate telecommunications within the design of transportation projects from the beginning. Contract provisions should be considered to describe how these needs will fit into future projects that may be conducted by the public agency. It is at this level that full flexibility for consideration of relocation, construction, maintenance, and access requirements can be accommodated in project design.

While it may be difficult to foresee what these needs may require, it is incumbent upon the partners in the shared resource agreement to carefully resolve responsibilities for these eventualities in their contracting process. Most agencies will find it very difficult to project and to foresee exactly what form these opportunities may take in the contract process. Therefore, contract provisions to provide flexibility for the partners need to be include in the contract documents.

"On limited access roadways, use existing structures such as bridges, overhead and roadside signs to place antennae or as base for extended structures, both to minimize visual impact and safety problems. On local roads try to blend with existing phone and electrical poles, e.g., use wooden poles for antennae, but taller than the standard electric pole."

Step 4: Following Up



After the contract or contracts are signed and the partnerships are officially launched, the public partner shifts to follow-up activities. There are two types:

1. Monitor current partnerships; and

2. Consider future partnerships.

Monitor Existing Partnerships

There are several reasons for monitoring current partnerships. Aside from the obvious need to ensure compliance with contract terms, the public agency should review how the arrangement is working out and decide whether or not the relationship would benefit from changes in contract or operating terms. Component activities include:

- Check construction and maintenance activity;
- Review partner resale and sublease efforts; and
- Revisit and, if necessary, revise partnership relationship

to adapt to conditions not foreseen or adequately addressed in the initial negotiations.

Check Construction and Maintenance Activity

Whether or not the partnership contract spells out construction and maintenance standards in detail, the public agency should monitor these activities for adherence to its design and safety standards. Public agency investigation and documentation serves two objectives:

- Verify adherence to specifications and standards;
- Map communications facilities and equipment (both above and below ground) to avoid future damage to buried equipment and interference with above ground infrastructure.

Review of current and planned construction can also serve another purpose: to determine whether greater cost-effectiveness or efficiency can be achieved if practices are changed in some way, for example, by re-ordering project milestones to adapt to a shift in market conditions or by co-locating equipment that originally was to be distributed between two different sites.

Revisit/Revise Relationship

Once the partnership is underway, the public agency should stand back and review how the relationship is operating with an eye to negotiating revisions with their private partner if they feel it is warranted. The purpose of revisiting the contractual relationship is to adapt that relationship to changes that have taken place since the contract was originally negotiated. In some cases, those changes are shifts in real factors; in other cases, they are differences between anticipated and actual conditions.

Some of the reasons for revisiting and possibly revising the relationship might include:

- **Unanticipated challenges:** Certain aspects of the relationship may be different in practice than anticipated, for example, the public sector may find that legal challenges to earmarked cash revenues argues for barter arrangements;
- **Change in communications needs:** Public sector communications needs may be different than forecast, arguing for a greater or lesser reliance on in-kind compensation;

- **Shift in communications design:** Public sector communications blueprint may change in such a way that they want less communications capacity of a particular type in one area and more in another area than originally planned; this might be the case if there were a shift from wireline to mixed wireline-wireless systems to support transportation in an urban area, for example, coupled with increased demand for wireline capacity in adjacent suburban or rural areas.

- **Increase in demand for communications:** Both public and private demand for communications capacity may be greater than originally forecast and the public sector (or private partner) would benefit from increased capacity.

Several experienced shared resource project managers suggested that contracts and relationship be made flexible enough to allow for such revisions, for example by:

- Denominating compensation in generic or equivalent-value terms (to allow revisions in type and placement of equipment, or shifts between barter and cash);

- Including contract provisions that deal with capacity expansion, for example, setting out conditions for new construction by current partners, including a time limit for exercising expansion options; describing when and how new partners might be selected over existing partners to expand capacity in the system;

- Describing the type and degree of changes that can be re-negotiated when leases are renewed without violating the basic contract.

Step 3 reviewed some of the issues in dealing with future expansion as part of the contract negotiating process. To the degree that these were not adequately addressed and included in the signed contract, they need to be included in Step 4's re-evaluation process.

Consider Future Partnerships

Because the market for shared resource ventures is unpredictable, there is always the possibility that additional project opportunities will present themselves. These opportunities may come directly from the private sector in the form of new opportunities for existing arrangements, as completely new prospects in previously undeveloped rights-of-way or alongside established projects, or as some combination. It is also possible that the agency will itself seek to generate new opportunities for partnerships to supplement those already in place.

Consequently, the shared resource planning process should consider the possibility of new partnerships beyond the initial one(s), determine whether or not to pursue new opportunities if they arise, and, if so, integrate into the process the means for effectively accommodating such opportunities. The process for accommodating new opportunities includes:

- **Evaluate lessons** from current partnership(s),
- **Weigh costs** and benefits of new partnership(s), and
- **Repeat procedure** described in this guidance for constructing shared resource partnerships.

Evaluate Lessons

Although lessons from prior experience are a central component of this guidance, new lessons are learned as agency expertise expands and the telecommunications market itself evolves. Such hindsight is valuable when it can be applied in future situations; this is certainly true for shared resource projects since they are a fairly new form of public-private partnerships.

By the time that one or more shared resource projects have been undertaken, the public agency involved will have gained institutional expertise in developing such projects. Moreover, the process will have highlighted what worked, what did not work, and why. That experience must be captured and used in structuring future partnerships — ideally through formal project reports, but at least informally through records maintained or notes submitted for the file. Lessons learned include a myriad of issues, such as:

- **Costs**: how much administrative work did it take to execute the project? Were support costs greater or less than expected? Will future costs be similar/less/more?
- **Benefits:** did the agency save costs as a result of the project? Can that value be estimated? Is there a better way to receive benefits, e.g., different form of compensation?
- **Administrative:** was the agency quick to respond? Could the process be streamlined to increase the chance for future prospects? Were any technical steps missed or overlooked (e.g., aesthetic considerations)? Was the process of enlisting partners (procurement) effective? Was the RFP responsive to private and public sector needs — sufficient information, too vague or too detailed? If some vendors did not respond, why not?

- **Institutional:** were the correct public sector participants involved at the start? Should others have been added? Would outside technical support help? Was there political or corporate opposition? How might this be anticipated and addressed in the future?

- **Negotiations:** did the negotiations proceed on schedule to the mutual satisfaction of both the public agency and the private partner? Were some issues of importance overlooked (surfacing later in the relationship)? Was the contract too specific or restrictive? too general or vague?

Weigh Costs and Benefits

Lessons learned include estimates of costs and benefits from the project. As part of its hindsight analysis, the agency should evaluate the relative value of undertaking similar initiatives in the future, particularly when the parameters are known. That it, the agency will have information on the costs of the procurement process. It can also estimate the benefits anticipated, whether from set lease payments or provision of additional communications capacity to meet needs not currently serviced.

For example, if the contract mechanism is that of an open lease with standardized terms for compensation, the agency may be willing to entertain any size projects, large or small, since the cost of adding a new partner is very low and the benefits are likely to outweigh costs. On the other hand, if standard practice is to issue RFPs for each venture and its history indicates a high per-project cost for competitively bid and negotiated procurements, the agency may well reject applications for access to a small segment or land parcel because the procurement costs could far outweigh the anticipated benefits.

Repeat Procedure

If agency officials decide that there are net benefits to be gained from expanding their shared resource program, they should review the overall procedure described in this report, review its resources, and decide which steps need to be repeated when they pursue additional prospects. The four step implementation process may have to be repeated in its entirety, for example if the original project was a wireline shared resource venture and the subsequent one focuses on wireless communications. However, even when the original project and the new opportunity are different, it is likely that much of the experience, documentation and expertise will still be relevant and some sub-steps of the process can be skipped over or compressed.

Conclusion

Shared resource projects offer an opportunity for partnerships to address both private and public sector telecommunications needs through joint use of public freeway and highway rights of way, generating cash and/or in-kind compensation to reduce the net cost of public sector ITS and transportation communications. This guidance has endeavored to identify and describe activities and issues involved in such arrangements.

Because the opportunity for shared resource partnerships is based on market forces and has a limited window of opportunity, timeliness is critical. Another window of opportunity may open again in the future as the market for telecommunications evolves and new technologies are developed. But when and how that opportunity will be presented, and how relevant it will be for roadway ROW owners, cannot be forecasted; public agencies are well-advised to evaluate and act upon current opportunities rather than postpone in the hopes of future opportunities.

In undertaking this process, public agencies should keep the following practical maxims in mind:

- **Keep the process moving;** although preparatory activities are important and information gathering is significant to the process, timeliness is critical.

- **Strive for administrative efficiency;** bureaucratic efficiency is important not only for the sake of timeliness but also to ease the perceived and real administrative burdens faced by potential private partners; project champions and project managers can be critical to success.

- **Seek a judicious balance between conflicting objectives;** for example, balance the benefits of contract comprehensiveness and specificity (to avoid misunderstandings) with the long term advantages of partnership flexibility (to adapt to changing conditions).

This guidance is descriptive rather than prescriptive. As the guidance indicates, there are a number of ways to approach and structure shared resource projects. First, the activities defined here can be undertaken in different sequences or overlapped to suit each ROW owner and its partners. Second, there are different options for addressing the issues, thus projects can be adapted to individual circumstances and variations among states, localities, and partner preferences. Most importantly, this means that shared resource projects are doable in a wide range of contexts so long as the window of opportunity is open.

Appendix A

AASHTO POLICY RESOLUTION PR-21-95
TITLE: INSTALLATION OF FIBER OPTIC FACILITIES
ON HIGHWAY AND FREEWAY RIGHTS-OF-WAY
(As approved by the AASHTO Board of Directors on October 29, 1995)

WHEREAS, AASHTO has long maintained a policy in opposition to the longitudinal use of freeway rights-of-way for utilities; and

WHEREAS, there has been and will continue to be rapid growth in telecommunications applications occasioned by and utilizing fiber optics technologies; and

WHEREAS, buried fiber optic cable can be installed with minimal disturbance of existing traffic, require infrequent access for maintenance purpose, can usually be sited to even further minimize disruption or hazard to vehicular freeway users, and in other ways can be distinguished from other types of utilities such as pipelines and electrical transmission facilities; and

WHEREAS, fiber optic technology can be used to enhance Intelligent Transportation System programs and projects; and

WHEREAS, the U.S. Congress is nearing completion of a telecommunications act which inter alia will likely enable the owners of freeway and highway rights-of-way the ability to receive cash and non-cash compensation for the use of such rights-of-way for installation of fiber optic cable, and further will likely provide for preemption by the Federal Communications Commission of any state or local laws or regulations which inhibit or deny such use except in defense of the public safety and welfare; and

WHEREAS, at its April, 1995 meeting the Standing Committee on Highways (SCOH) established a Task Force on Utilities in Highway Right-of-Way to evaluate and advise on issues raised by the pending legislation and the subject of fiber optics in highway rights-of-way; and

WHEREAS, the task force and SCOH have further reviewed this subject and believe that formal action by the Board of Directors is in order;

NOW, THEREFORE, BE IT RESOLVED that the AASHTO Board of Directors acknowledges the distinction between buried fiber optic cables and other types of utilities, wherein it is deemed permissible to permit the longitudinal use of freeway rights-of-way for the former under appropriate guidelines while retaining existing policy in opposition to the longitudinal use of freeway rights-of-way for other utility types; and

BE IT FURTHER RESOLVED that the AASHTO Board of Directors requests the Standing Committee on I Highways, in consultation with the task force, its affected Subcommittees and other AASHTO Committees as I appropriate, to prepare appropriate guidelines on the technical, operational, economic and financial aspects of the I placement of fiber optic cables in highway and freeway rights-of-way for eventual adoption by the Board of ~ Directors and publication by AASHTO.

Appendix B

KEY SECTIONS OF THE TELECOMMUNICATIONS ACT OF 1996

High Relevance

1. Section 251.	Interconnection
2. Section 253.	Removal of barriers to entry
3. Section 254.	Universal service
4. Section 259.	Infrastructure sharing
5. Section 303.	Preempting regulation of telecommunications services
6. Section 401.	Regulatory forbearance
7. Section 703.	Pole attachments

Moderate Relevance

1. Section 207.	Restrictions of over-the-air reception devices
2. Section 256.	Coordination for interconnectivity
3. Section 302.	Cable service provided by telephone companies
4. Section 602.	Preemption of local taxation with respect to direct-to-home (DTH) services
5. Section 704.	Facilities siting

Informational

1. Section 102.	Eligible telecommunication carriers
2. Section 252.	Procedures for negotiation, arbitration and approval of agreements
3. Section 255.	Access by persons with disabilities
4. Section 402.	Biennial review of regulations: regulatory relief
5. Section 403.	Elimination of unnecessary FCC regulation

EXHIBIT 6